

Solutions to develop human resources for marine resources and environment management in the new context

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Abstract: *To realize the goals of making Vietnam a strong marine nation, prosperous from the sea, ensuring the marine environment, and firmly protecting national sovereignty over its seas and islands, the human resources for marine resources and environment management need to be improved. In the current context, human resources of this sector have exposed several limitations, failing to effectively meet the requirements of state management of seas and islands. Therefore, if this situation is not promptly remedied, the national strategic goal of economic development linked with environmental protection and the defence of maritime sovereignty will be hard to achieve. This article contributes to an overview of research related to the development of human resources for marine resources and environment management, pointing out the achievements as well as the existing problems, analysing, evaluating, and proposing a number of solutions to improve the quality of Vietnam's human resources for marine resources and environment management in the coming time.*

Keywords: *Vietnam Sea; human resource management; marine resources; marine environment.*

1. Introduction

With its vast exclusive economic zone (EEZ) and extensive coastline, Vietnam holds a strategically significant position for socio-economic development, national defence, security, and environmental protection. According to its Maritime Strategy, the country aims to become strong at sea, prosperous from the sea, with the national sovereignty over its seas and islands firmly protected,

contributing to the country's stability and development. In particular, on February 6, 2020, the Prime Minister issued Decision No. 203/QĐ-TTg on establishment of National Steering Committee on implementation of the Strategy for Sustainable development of Vietnam's Marine Economy by 2030, with a vision to 2045. This Committee was formed by merging the State Steering Committee on Baseline Survey of Sea Resources and

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Environment and the Coordination Committee on implementation of Vietnam's Integrated Coastal Zone Management Strategy by 2020, with a vision to 2030 so as to provide focused and consistent direction on the sustainable development of Vietnam's marine economy. This decision also emphasized the necessity of human resources for marine management to achieve the goals of marine economic development and protection of the marine environment.

At the 13th National Congress of the Communist Party of Vietnam, the importance of developing high-quality human resources and attracting and retaining talent was affirmed, considering it a driving force to enhance competitiveness and the autonomy of the economy in the context of international integration (Communist Party of Vietnam, 2021). According to the Decree No. 25/2009/ND-CP dated March 6, 2009, of the Government on general management of natural resources and environmental protection of the seas and islands, the strategy for developing general management of natural resources and environmental protection of the seas and islands has determined that: "All state management activities for the general management of marine resources and islands must be people-oriented and for the common benefit of the whole society. Focus on building state management officials for marine resources and islands who are highly professional and have a good attitude of service". The role of human resources is increasingly important and urgent. However, faced with the requirements for developing the marine economy in general and those for general state management of marine resources and environment protection in particular, in the new period, human resources still have several limitations, failing to meet the demands for effective state management of the sea. Moreover, the Fourth Industrial Revolution also has strong impacts on many fields and industries, profoundly changing the

world. Therefore, developing the quantity, improving the quality and structure, and effectively using human resources for marine resources and environment management are always top concerns of the Party, the State, various sectors, localities, and every Vietnamese citizen nowadays.

Vietnam's economy is profoundly integrating with the global economy, which necessitates a thorough study of both theoretical and practical aspects, including research on the experiences of countries with seas and islands in developing human resources to draw practical and specific lessons for Vietnam. Synchronous, feasible, and practical solutions will thereby be proposed to rapidly develop the human resources to manage marine resources and the environment, meeting the requirements of the new situation.

2. Basic concepts and research methods

2.1. Basic concept of human resources for marine resources and environment management

Human resources encompass all individuals of working age. In a broad sense, this refers to the source of labour supply for society; in a narrow sense, it refers to the labour capacity of society, serving as a resource for social development (International Labour Organization, 2017). More specifically, it includes all employees working under a defined structure, possessing the capabilities and potential to meet this organization's current and future demands. Legal regulations organize and utilize these resources to maximize their pivotal role in the organization's survival and growth.

It is stipulated in Clause 2, Article 3 of the 2015 Law on Natural Resources and Environment of Sea and Islands that: "General management of natural resources of sea and islands means activities of planning and organizing the implementation of policies, mechanisms, and means for inter-sectoral and

inter-regional coordination to ensure that natural resources of sea and islands are exploited and used effectively, maintain function and structure of ecosystem for sustainable development, protection of sovereignty, sovereign rights and national jurisdiction of Vietnam over the seas, and to ensure national defence and security."

From the explanation above, the concept can be summarized as follows: The human resources for managing marine resources and the environment are not just employees on the payroll of the management agencies. They are the ones who perform crucial management tasks, utilizing their labour capabilities and potential according to legal regulations. Their role is to enhance the dominant role of human resources in executing functions and duties related to marine resources and environment management (Dat, 2019).

2.2. Research methods

Through the use of secondary data that involves collecting, selecting, and retrieving scientific works published in journals, scientific magazines, conference proceedings, and reports from functional agencies on human resources and the development of human resources for managing marine environmental resources in Vietnam, the authors analyse, evaluate, interpret, and propose a number of solutions to develop and improve the expertise of human resources for managing marine resources and environment in Vietnam.

3. Results of the study and some evaluations

3.1. Recent development of human resources for marine resources and environment management in Vietnam

Firstly, regarding the current status of human resources.

According to the Vietnam Administration of Seas and Islands, from 2015 to 2020, the human resources for managing marine resources and the environment at the central

level have decreased. To implement the government's guidelines, the Ministry of Natural Resources and Environment has restructured its organizational structure, reducing the Vietnam Administration of Seas and Islands from 16 to 14 units. All public service units under the Vietnam Administration of Seas and Islands have achieved complete autonomy. The process of achieving autonomy in recent years has presented challenges for these public service units, leading to a significant number of resignations, with precisely one unit experiencing nearly 40 resignations in a single year. Statistics also indicate that the human resources for managing marine resources and the environment in 2020 decreased by 25.7% compared to 2015 (Vietnam Administration of Seas and Islands, 2020a). In 2020, the total number of cadres, civil servants, public employees, and labourers of the Administration was 593, including 118 civil servants, 189 public employees, and 335 contract labourers (Vietnam Administration of Seas and Islands, 2020b).

In localities, the total number of cadres, civil servants, public employees, and labourers is 229, including 195 civil servants working in the natural resources and environment departments in coastal provinces, taking charge of marine resources and environment management; 19 public employees and 15 contract labourers (Table 1). Currently, at rural district and commune levels, no specialized officials are dedicated to sea and island affairs. Human resources from local departments are typically dual-role, mainly comprising people in state management agencies and those involved in environmental protection tasks within service units (Vietnam Administration of Seas and Islands, 2020b).

According to surveys in coastal rural districts, officials under the Division of Natural Resources and Environment are mainly assigned to address marine resources and environmental issues.

Table 1: Summary of human resources for marine resources and environment management at central and local levels from 2015-2019

Year	Human resources at central level				Human resources at local level				Total
	Civil servant	Public employee	Contract labourer (following the Decree no. 68)	Total	Civil servant	Public employee	Contract labourer (following the Decree no. 68)	Total	
2015	126	391	360	877	185	19	26	230	1.107
2016	125	382	312	819	189	25	23	237	1.056
2017	124	237	321	681	209	23	24	256	938
2018	119	237	335	691	204	22	25	251	942
2019	118	202	273	593	195	19	15	229	822

Source: Compiled by author from the Ministry of Natural Resources and Environment and Vietnam Administration of Seas and Islands, 2021.

Secondly, regarding the development plan of human resources for marine resources and environment management.

(1) Regarding human resource planning, job positions have been appropriately identified, and an overall review of the existing human resources has been conducted. This review has made plans to allocate, adjust, supplement, and arrange human resources suitable for each individual and job position. Proper determination of the structure and quantity of human resources enables recruitment, training, fostering, utilization, and management in accordance with human resource policies. Over recent years, relevant authorities have closely followed the Ministry of Home Affairs' instructions on human resource planning in marine resources and environment management. The Vietnam Administration of Seas and Islands has directed its units to analyse and determine job positions, organizational structures, work analysis, and evaluate the current state of human resources. According to Decision No. 2433/QĐ-BTNMT dated October 6, 2017, issued by the Minister of Natural Resources and Environment on assigning job position

listings within administrative organizations under the Vietnam Administration of Seas and Islands, a total of 35 job positions were identified. Accordingly, its units have been divided into work groups as follows: (1) Leadership, management, and administration group; (2) Professional implementation and execution group; (3) Supportive and service-oriented implementation group. Additionally, a competency framework for each job position has been developed, professional titles and professional title grades have been determined, and the number of human resources necessary to fulfil assigned tasks has been identified.

(2) Regarding recruitment and attraction of high-quality human resources: guidelines and policies for recruiting and attracting high-quality human resources for marine resources and environment management were outlined in Resolution No. 09-NQ/TW dated February 9, 2007, by the Central Executive Committee (term X), and Resolution No. 36-NQ/TW dated October 22, 2018, by the Central Executive Committee (term XII). However, in practice, these guidelines and policies must translate into specific actions faster. Particularly from

2014 to 2019, the Ministry of Natural Resources and Environment did not organize civil servant recruitment exams to supplement human resources for marine and environmental management. Regarding the recruitment of public employees, the Vietnam Administration of Seas and Islands only developed a recruitment plan and began implementing recruitment procedures in 2020. There currently needs to be a new recruitment plan at the local level.

(3) Regarding vocational training, training programs, and professional development for human resources:

- At the central level, the government has assigned the Ministry of Education and Training to lead and cooperate with other ministries, sectors, and localities to review the human resources development plan in the marine industry. This plan emphasizes developing marine human resources through undergraduate and postgraduate education, vocational training, building training facilities, and training programs for human resources in managing and exploiting marine resources and the environment.

The Ministry of Labor, Invalids and Social Affairs has reviewed, adjusted, and supplemented the vocational training establishment network planning. They supervised the implementation of strategies and plans for developing human resources for marine resources and environment management. Fifteen occupations related to the marine sector have been included in the list of priority training occupations, comprising nine at the international level, three at the regional level, and eight at the national level (Ministry of Education and Training, 2012).

In the training programs related to the marine sector, the Ministry of Education and Training has implemented the review, supplementation, modification, and support

of educational institutions to open training majors serving the implementation of marine economic development tasks. They have supplemented additional policies to prioritize enrollment for undergraduate, master, and doctoral students from particularly disadvantaged communes in coastal areas and islands. They aim to attract and recruit high-quality local human resources for the marine sector. Currently, occupation training relating to the seas and islands primarily focuses on geology, minerals, geodesy, mapping, land management, remote sensing, meteorology, hydrology, environmental management, water resource management, climate change adaptation, and marine construction. Annually, these higher education institutions train hundreds of doctorates and masters and thousands of engineers in aquatic resources and environment to serve the country's economic development.

Within the Ministry of Natural Resources and Environment are two universities: Hanoi University of Natural Resources and Environment and Ho Chi Minh City University of Natural Resources and Environment. These organizations have conducted training in the following majors: marine management science, law of the sea, aquatic resources management, marine environment management, marine science and technology, marine construction, etc. Additionally, three institutes offer doctoral programs: Institute of Geosciences and Mineral Resources, Institute of Meteorology, Hydrology and Climate Change, and Institute of Geodesy and Cartography. These institutes provide postgraduate degrees in geology, mineralogy and geochemistry, meteorology and climatology, hydrology, oceanography, natural resources and environment management, climate change and sustainable development, and geodetic-mapping methods.

- At the local level: The system of vocational training schools in coastal areas has

been significantly upgraded and expanded with new establishments. Currently, there are 90 vocational colleges, 133 vocational secondary schools, and 454 vocational training centers in coastal provinces and cities. Many colleges and vocational secondary schools offer training programs in environmental resources and marine economics (Ministry of Education and Training, 2012).

In addition to long-term formal education, the Ministry of Natural Resources and Environment also focuses on training and fostering their civil servants and public employees in general and the human resources for managing natural resources and marine environment in particular (through the Institute of Natural Resources and Environment Training). Annually, the ministry organizes communication campaigns and encourages and provides opportunities for human resources to participate in training courses and self-improvement initiatives.

3.2. Assessment of current state of human resource development for managing marine resources and environment in Vietnam

Firstly, regarding strengths:

The quantity, quality, and structure of human resources for managing marine and island resources and the environment have shown positive changes in recent years, gradually meeting the integrated state management requirements for seas and islands. Attention has been given to investing in equipment to improve working conditions for these human resources, thereby significantly contributing to enhancing the quality and effectiveness of task implementation.

Efforts in education, training, and professional development have been emphasized to enhance vocational skills, organizational discipline, and industrial labor style among human resources. The professional skills and expertise of human resources in state management agencies at

central and local levels have been raised, accompanied by a sense of labor discipline and the spirit of teamwork.

Implementing policies and laws concerning human resources for managing marine resources and the environment has been gradually supplemented, completed, and seriously enforced. The organizational apparatus for managing marine resources and the environment has been streamlined, clarifying functions and tasks. Accordingly, job arrangements, assignments, and conditions for human resources have been properly aligned with responsibilities, time of implementation, and completion.

Secondly, regarding weaknesses and shortcomings:

(1) Shortage of human resources for marine and island management.

The structure and utilization of human resources in Vietnam's marine resources and environment face many challenges. In localities, a severe shortage of personnel with high professional expertise in marine and island areas exists. Part of the reason is that the workforce engaged in local marine management needs to be more stable, often having to undertake multiple other responsibilities.

Vietnam's human resources for marine resources and environment management are at risk of severe shortage. There is a serious lack of leading experts in a number of fields, such as oceanography, geodetic mapping, marine meteorological forecasting, marine geology, and skilled technical labor. There is a significant disparity in the quantity and quality of human resources for managing marine resources and the environment between central and local levels, which is a concerning issue.

(2) Limitations in physical fitness and health of human resources for managing marine resources and the environment. Jobs in marine and environmental management require higher physical fitness and health

compared to other sectors, demanding endurance and resilience in harsh working environments. Since human resources in this field do not really meet the physical and health requirements, they are still limited in completing tasks.

(3) Training, fostering, and enhancing professional skills for human resources for marine and environmental resources still need to be improved and driven by actual usage needs. Training needs to align with practical requirements closely. Some leaders and managers still need to gain leadership and management skills, an understanding of legal frameworks, proficiency in foreign languages, and computer literacy. There is a critical shortage of specialized human resources in maritime sectors, such as marine technology, new material technology, nanotechnology, biotechnology, information technology and digital technologies, marine biopharmaceuticals, undersea engineering and technology, emerging environmental pollution issues, especially the lack of young, high-level personnel nearby.

(4) The infrastructure, technology, and working conditions of agencies and units have not truly corresponded to the assigned tasks. Facilities and equipment for task implementation are still inadequate, lacking, and outdated, unable to meet job requirements. Some units, especially revenue-generating public service delivery units, encounter many difficulties, such as low salaries and incomes.

(5) Lack of synchronization and specificity in policy development for human resources for marine resources and environment management has led to difficulties in implementation. On the other hand, these human resources' remuneration and welfare systems currently serve as compensation for labor input only, lacking attractiveness to attract capable and talented individuals or retain skilled personnel passionate and committed to the

profession. Additionally, the capacity, qualifications, experiences, access, and adaptation to new and modern technological equipment of these human resources are still limited; skills in applying knowledge to practical work, skills in handling and solving problems, as well as skills in capturing information for integrated management of sea and islands are not good enough.

4. Solutions to develop human resources for marine resources and environment management in Vietnam

To enhance the capacity of state management of marine resources and environment, contributing to the sustainable development of Vietnam's marine economy by 2030, with a vision to 2045; strive for Vietnam to become a solid maritime nation; form an ocean ecological culture; proactively adapt to climate change and sea level rise; prevent the trends of marine environmental pollution, degradation, coastal erosion, and sea encroachment; restore and conserve critical marine ecosystems, it is necessary to effectively implement a number of solutions as follows:

Firstly, continuing to improve the organizational structure linked to the development of human resources.

Planning, completing, and stabilizing the management apparatus and developing human resources to meet the requirements of state management of seas and islands in the new situation. Reviewing, supplementing, building, perfecting, and vigorously promoting the implementation of policies, laws, and strategies for human resource development. The Ministry of Natural Resources and Environment continues to perform its function and tasks effectively as a permanent agency, assisting the government and the prime minister in general and unified state management of seas and islands. The Ministry focuses on building a team of competent and highly professional officials in state management agencies, coordinating between

central and local agencies in sea and island management, and implementing unified directives to carry out the Strategy for Sustainable Marine Economy Development from central to local levels.

Secondly, improving policies to attract and train human resources in the management of marine resources and environment.

Continuing to review, develop, and enhance mechanisms and policies, especially those aimed at attracting and selecting talents to work for the Vietnam Administration of Seas and Islands and the sea and island departments and divisions of coastal provinces and cities. Striving gradually to form a team of managers, scientists, and international standards experts with in-depth expertise in sea and ocean issues. Implementing timely material and spiritual incentive policies for people working in the field of marine investigation and research, particularly those who contribute significantly, to ensure they are dedicated and passionate about their work.

Researching and applying special regimes concerning salaries, bonuses, and other welfare benefits for civil servants, public employees, and laborers engaged in marine resource and environment investigations. Enhancing the application of information technology in human resource management; implementing recruitment, utilization, and management of human resources that align with requirements to maximize their capabilities and strengths.

There are some measures needed to attract high-quality human resources, motivate and encourage their contributions to marine economic development, protect natural resources and the environment, and maintain maritime sovereignty:

(1) Develop and supplement policies to attract and encourage competent officials and experts in seas and islands to work at the Vietnam Administration of Seas and Islands and local maritime departments. These

policies should prioritize recruitment, utilization, and compensation for the sea and island experts at local maritime departments, aligning with local practices and task requirements. Support should be provided regarding funding and time for self-study and professional development in sea and island-related fields.

(2) Provide opportunities for career advancement and create favorable working conditions for skilled human resources to foster stronger ties with their sea and island-related agencies.

(3) Focus on building and improving the working environment for human resources, including technical infrastructure to support state management of seas and islands. This involves creating favorable conditions for facilities such as offices, laboratories, and transportation means for leading experts (especially for professors, associate professors, and foreign experts), enabling them to maximize their capabilities and strengths in their work.

(4) Focus on researching and building standards for objective, transparent, and accurate evaluation of the quality and effectiveness of human resources activities. Deploy a timely, appropriate material and spiritual reward mechanism for individuals and teams that successfully fulfill their assigned tasks and make significant contributions to the management of marine resources and the environment.

Thirdly, enhancing the training of high-quality human resources.

Coordinating closely with relevant agencies to educate and enhance awareness of organizational discipline, knowledge of the sea and ocean, survival skills, adaptability to climate change, sea level rise, and disaster prevention. Establishing mechanisms to support and enhance the quality and development of the training network for marine human resources, striving to achieve

advanced standards within the region. Efficiently implementing vocational training to meet the demands of the marine economic sectors and support residents' job change. Emphasizing improving language and information technology skills for cadres, civil servants, public employees, and laborers.

Fourthly, enhancing international cooperation in human resource development.

It is necessary to create a favorable legal corridor to mobilize domestic and foreign resources for investing in infrastructure construction, developing science and technology, human resources, and transferring knowledge about the sea. Actively participate and proactively promote the establishment of global and regional mechanisms related to the oceans and seas. Maintain and develop cooperative relationships with countries and international organizations, strengthening the capacities of human resources to take the initiative in controlling and managing ocean plastic waste, identifying priority partners and potential areas for development cooperation for each stage, aligned with domestic technological capabilities and applications. The immediate task is to strengthen the capacity of human resources to survey, monitor, and analyze experiments to serve research on ocean plastic waste and control marine environmental pollution.

5. Conclusion

In an era where terrestrial resources are increasingly depleted, the significance of the seas becomes vital for every nation and its people. Therefore, the rational and scientific management, exploitation, and protection of marine resources and environments are goals and motivations pursued by all coastal nations.

The article has contributed to enriching the theory of human resource development for marine environmental management, building the framework that serves as a basis to analyze and evaluate the current state of human

resource development for nature resource and environment management in Vietnam in recent years. Then, several solutions, conditions, and recommendations to the State and the Ministry of Natural Resources and Environment regarding the development of these human resources in Vietnam from 2020 to 2030, with a vision to 2045, contributing to meeting practical requirements were proposed. Concurrently, these efforts aim to make Vietnam a strong nation at sea, prosperous from the waters, ensuring the environment, and firmly protecting national sovereignty over its seas and islands.

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